MEMORDANDUM

8 August 1988

To: RICHARD SUGAREK (T-4-3)

From: GERALD F.S. HIATT, Ph.D.
Regional Expert Toxicologist

Subject: ORDOT LANDFILL/GUAM: SITE CHARACTERIZATION REPORT

Per your recent request, I am forwarding this final version of my comments on the Ordot risk assessment (draft dated 28 June 1988).

I have reviewed the risk assessment prepared for the Ordot Landfill site in Guam as presented in the final Initial Site Characterization Report, Ordot Landfill, Island of Guam (prepared by Camp, Dresser & McKee, dated 18 November 1987).

The problems with the risk assessment are as follows:

1) There are very few site samples on which to base a risk assessment. The only data reported in the document are from:
2 river samples (1 upstream, 1 downstream)
5 groundwater samples
(3 on-site (1 upgradient, 2 downgradiant), 2 off-site)
3 leachate samples (from the dry season only).

These are too few samples on which to base a conclusion that the landfill presents no current threat to human health or the environment.

2) Rumors of "fishkills" within Pago Bay were not investigated. Leachate from the landfill undoubtedly reaches Pago Bay; the bay is fed by the Lonfit River, which in turn receives leachate from the landfill (the river is about 1000 feet downhill from the landfill).

These could be an indication of significant contaminant release from the landfill with subsequent entry into a potentially significant ecological and human exposure pathway.

3) PCB-containing wastes are reported to have been disposed at the landfill, yet no PCB analytical results were reported in the final Initial Site Characterization Report.

4) There was no analysis for potential dioxin contamination at the site. The site is believed to have received PCB-containing wastes and subterranean fires have reportedly occurred a number of times. Dioxin is a potential combustion product of PCB and should be considered.

5) With the exception of a phthalate in one well, no organic constituents were detected at any of the on-site monitoring wells. This seems unusual for an active landfill with Ordot's history.

The sample collection procedures, as described in the report, raise questions about the ability to detect any volatile compounds that may have been present in the leachate or the river; significant voaltilization may have occurred during sample collection. (It is noted on p. 2-1 that the aliquoting process following sample collection may have resulted in the loss of some volatile chemicals.)

6) Two issues appear to remain unsettled:
- whether or not the any part of the landfill overlays the limestone aquifer.
- potential for hydraulic conductivity between the volcanic aquifer and the limestone aquifer.

Both of these issues are concerned with the potential for landfill leachate to contaminate the limestone aquifer, which is Guam's only source of drinking water.

The document states that there appears to be no connection between the groundwater under the landfill (or its leachate) and the limestone aquifer; no supporting data are presented (hopefully such data are more extensive than the very limited chemical contamination data).

This conclusion should receive <u>thorough</u> hydrogeologic review before being accepted or should be the subject of future monitoring.

7) All of the site sampling was performed during Guam's dry season and may not reflect the conditions present during the wet season. Page 3-1 states that dry season sampling would represent a "worst-case with respect to contaminant loading". It is unclear why this is necessarily the case; this statement should have more support, either from data or the literature. It is likely that a larger portion of the landfill will be "washed out" by the higher flow rates during the wet season (i.e., that "channeling" occurs during the low flows characteristic of the dry season).

8) Standard procedures were <u>not</u> followed during all phases of sample collection, as noted on p. 2-9. This is of concern when the site characterization is based on a very limited number of samples, none of which showed volatile organics as would be expected from a landfill.

9) The document concludes that there is "not a significant air quality problem" at the site. Cited in support for this conclusion are the statements that "significant noxious odors were not observed" and "nor were any dead animals present" (p. 3-17). Two comments:

- neither of these is sufficient criteria for concluding there is "not a significant air quality problem".
- the lack of noxious odors statement conflicts with a statement on p. 2-10 that "Noxious odors have historically been a problem at the Ordot landfill".

10) A statement on p. 2-3 states that "...all [leachate] samples were analyzed for RAS inorganics and pesticides/PCBs". The sample plan called for analysis for "RAS volatiles, semi-volatiles, pesticides/PCBs and inorganics" (p.2-1).

What happened to volatiles and semi-volatiles?

11) A statement on p. 3-13 states that a phenol value was reported as "qualified". This term should be defined as its meaning in this context is unclear.

12) The document states that the limestone aquifer is not expected to be affected by contamination from the landfill. Cited as evidence for this statement is the observation that the 2 off-site monitoring wells showed no evidence of any site contaminants. This conclusion implies or assumes that there has been sufficient time for any leachate to migrate to the location of the off-site monitoring wells. This contention should be supported by data or groundwater modeling.

13) Page 3-11 states that "...trace quantities of carbon disulfide and chlorobenzene were detected in sample SW-7". The data summary in Table 3-2 indicates these values were below the method detection limit and are "qualified".

14) Several of the metals levels in the leachate are above EPA's Ambient Water Quality Criteria for freshwater.

15) Currently at the site there is little or no control over the types of wastes being disposed (vehicles entering the site are "waved through" the front gate without close inspection and there are no obvious controls on "after hours" dumping; personal communication).

CONCLUSION:

From a toxicological point of view and given the history of the site, the limited amount of data available (10 samples total) do not inspire a high level of confidence in the conclusion that the site does not present a significant risk to human health or the environment. If EPA decides to abbrogate its responsibilty at this site, there should have a high level of confidence that the risks really are sufficiently low or that corrective measures will be undertaken.

The Ordot site appears to require more thorough study if no remedial action whatsoever is to be implemented and this decision is defended on the basis the site presents an insignificant risk to human health or the environment.

Following the briefing for the Deputy Regional Administrator, it is now my understanding that the following issues will be more thoroughly reviewed by the appropriate individuals/Offices within EPA:

- adequacy of the hydrogeologic data supporting the conclusion there is no threat to the limestone drinking water aquifer.
- quality of the data indicating no volatile organics in the leachate or river water.
- applicability of EPA Ambient Water Quality Cirteria to the leachate metals concentrations.

In addition, some remedial measures will be recommended, to be instituted by local authorities,to will include a surface water diversion system and a cap to eliminate the problem of leachate from the landfill.

GFS Hunt

cc: Jerry Clifford
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